

IN THE CLAIMS:

Please amend the claims as follows:

1. **(Currently Amended)** A method for producing a membrane-electrode structure, comprising the steps of:

applying ~~on a sheet substrate~~ a catalyst paste onto a sheet substrate,
wherein the catalyst paste comprises comprising an electron conducting material supporting a catalyst and an ion conducting material; and

drying the catalyst paste same, so as to form [[a]] an electrode catalyst layer;

thermally transferring said electrode catalyst layer onto each side of a polymer electrolyte membrane, ~~so as to form a laminated body, wherein such that~~ said electrode catalyst layer is connected to each side of said polymer electrolyte membrane;

applying ~~on a carbon substrate layer~~ a first slurry onto a carbon substrate layer, wherein the first slurry comprises comprising a water-repellent material and an electron conducting material; and

drying the first slurry same to form a water-repellent layer; ~~and then~~

applying ~~on said water repellent layer~~ a second slurry onto said water repellent layer, wherein the second slurry comprises comprising an electron conducting material and an ion conducting material; and

drying the second slurry same to form a hydrophilic layer, ~~so as to form wherein~~ a diffusion electrode consisting of said carbon substrate, said water-repellent layer and said hydrophilic layer is formed; and

~~laminating the previously formed~~ positioning said diffusion electrode on said electrode catalyst layer of said laminated body ~~through~~ via said hydrophilic layer; and [[.]])

pressing said laminated body and said diffusion electrode together the two under heating, ~~so as~~ to integrate said laminated body and said diffusion electrode.

2. (Original) The method for producing a membrane-electrode structure according to claim 1, wherein said second slurry comprises a pore-forming material.

3. (Original) The method for producing a membrane-electrode structure according to claim 1, wherein said catalyst paste comprises a pore-forming material.

4. (Currently Amended) The method for producing a membrane-electrode structure according to claim 1, wherein each of said catalyst paste and said second slurry comprises a pore-forming material, and wherein said hydrophilic layer and said electrode catalyst layer are formed using a such that the ratio of the a volume of pores with a pore size of 0.01 to 1 μm formed in said electrode catalyst layer by said pore-forming material to the a volume of pores with a pore size of 0.01 to 1 μm formed in said hydrophilic layer by said pore-forming material that is less than 1.0.

5. (Currently Amended) The method for producing a membrane-electrode structure according to claim 1, wherein said hydrophilic layer and said electrode catalyst layer are formed using a such that the ratio of the a weight of

~~an said ion conducting material contained in said electrode catalyst layer to the a weight of an said ion conducting material contained in said hydrophilic layer that~~ is set within the a range of 1.0 to 1.4.

6. (Currently Amended) The method for producing a membrane-electrode structure according to claim 1, wherein said hydrophilic layer and said electrode catalyst layer are formed ~~using a such that the ratio of the a weight of solid content in said electrode catalyst layer to the a weight of solid content in said hydrophilic layer that~~ is set within the a range of 1.0 to 3.5.

7. (Currently Amended) The method for producing a membrane-electrode structure according to claim 1, ~~which comprises applying said second slurry on said water repellent layer and drying the same, so as to form a wherein said hydrophilic layer has a having the maximum height of surface roughness, Rmax, of 40 μm or less.~~

8. (Currently Amended) The method for producing a membrane-electrode structure according to claim 7, wherein said hydrophilic layer is formed ~~such that it has a surface roughness in which the ratio of the a surface area to the a unit area that~~ is 1.25 or less.

9. (Currently Amended) The method for producing a membrane-electrode structure according to claim 7, wherein ~~said water repellent layer and said hydrophilic layer are formed such that the a differential pressure between one side of said diffusion electrode and the other side thereof is set within the a range between 100 and 300 mmAq, when the air is supplied at a flow rate of 0.5 L/cm²/min in the a direction of a the thickness of said diffusion electrode.~~

10. (Currently Amended) The method for producing a membrane-electrode structure according to claim 1, wherein said polymer electrolyte membrane is formed from a sulfonated polyarylene based polymer solution, and when said catalyst paste comprises catalyst particles consisting of a catalyst supported by carbon particles, an organic solvent solution containing a perfluoroalkylene sulfonic acid polymer, and a pore-forming material,

said electrode catalyst layer is dried ~~to such an extent that the~~ wherein a content of the solvent becomes 20% or less by weight based on the a total weight of said electrode catalyst layer, and the dried electrode catalyst layer is then thermally transferred onto and connected to said polymer electrolyte membrane.

11. (Currently Amended) The method for producing a membrane-electrode structure according to claim 10, wherein ~~said thermal transfer is carried out~~ the dried electrode catalyst layer is thermally transferred onto and connected to said polymer electrolyte membrane under a pressure within the a range of 1 to 5 MPa.

12. (Currently Amended) The method for producing a membrane-electrode structure according to claim 10, wherein said catalyst paste is applied on a surface of ~~said sheet substrate whose surface has~~ having a contact angle to water of 55° to 105°.

13. (Currently Amended) The method for producing a membrane-electrode structure according to claim 10, wherein when said diffusion electrode is laminated placed on each electrode catalyst layer and ~~they are~~ then pressed

under heating, the and wherein said diffusion electrode and said laminated body are pressured under an applied pressure is set within the a range of 0.5 to 4 MPa.

Claims 14-16 (**Cancelled**).

17. **(New)** The method for producing a membrane-electrode structure according to claim 1, wherein the membrane-electrode assembly is incorporated in a polymer electrolyte fuel cell.